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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/995,766 | 11/29/2001 | Jang-Kun Song | 06192.0212.NPUS00 | 1747 |

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McGuire Woods LLP
1750 Tysons Boulevard
Suite 1800
McLean, VA 22102

EXAMINER

SHAPIRO, LEONID

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 2673 | 5 |

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/995,766

Applicant(s)

SONG, JANG-KUN

Examiner

Leonid Shapiro

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-11,13,14 and 16 is/are rejected.
- 7) ☒ Claim(s) 2,6,12 and 15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other:

Drawings

1. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. All abbreviations need to be decipher, for example on page 4, Line 1- "TAP ICs".

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 4 and 13 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitations related to a first and second electrode refer to two different locations in the matrix. It is not clear how the singular electrode could be in two locations?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-5, 7-10, 13-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moon et al. (US Patent No. 6,421,039 B1) in view of Park (US Patent no. 6,573,532).

As to claim 1, as best understood by examiner, Moon et al. teaches a liquid crystal display panel, comprising: a plurality of gate lines formed in the horizontal direction (See Fig. 10, item 120, in description See Col. 6, Lines 15-20); a plurality of data lines formed in the vertical direction (See Fig. 10, item 120, in description See Col. 6, Lines 15-20); a first pixel electrode formed at an odd row of an odd column and at an even row of an even column among areas formed by the data lines and the gate lines (See Fig. 8a-8b, in description See from Col. 2, Line 65 to Col. 3, Line 3); a second pixel electrode formed at an odd row of an even column and at an even row of an odd column of the areas, and wherein a polarity of the second electrode is different from the first pixel electrode (See Fig. 8a-8b, in description See from Col. 2, Line 65 to Col. 3, Line 3).

Moon et al. does not show a common electrode line formed in the horizontal direction between the gate lines.

Park teaches a common electrode line formed in the horizontal direction between the gate lines (See Fig. 1, 6, items 26-28, in description See Col. 3, Lines 40-65 and Col. 11, Lines 35-53).

It would have been obvious to one of ordinary skill in the art at the time of the invention use a common electrode line formed in the horizontal direction between the gate lines as shown by Park in the Moon et al. apparatus in order to provide a thin film transistor panel for an LCD that reduces distortion of the voltage applied to a storage electrode line such that crosstalk and flicker problems are minimized (See Col. 1, Lines 53-57 in the Park reference).

As to claim 4, as best understood by examiner, Moon et al. teaches a liquid crystal display, comprising: a timing controller for outputting a first driving signal and a second driving signal that defines periods and amplitudes according to vertical and horizontal synchronization signals and a main clock signal (See Fig. 1, item between items 10-11); a data driver for outputting an image signal that drives a polarity of liquid crystal capacitor based on the first driving signal (See Figs. 1, 10, 14A, item 11, in description See Col. 1, Lines 33-37, Col. 6, Lines 15-20 and Lines 52-58); a gate driver for outputting a scanning signal based on the second driving signal (See Fig. 1, item 10, in description See Col. 1, Lines 33-37); outputting a common electrode voltage that is swung and synchronized with the image signal in a predetermined period (See Fig. 15A, items Vcom, Vs, in description See Col. 7, Lines 6-11).

Moon et al. does not show outputting a third driving signal from a timing controller and a driving voltage generator for receiving the third driving signal, raising or lowering levels of the third driving signal.

Obviously, if not inherently must be a third driving signal from a timing controller and a driving voltage generator for receiving the third driving signal, raising or lowering levels of the third driving signal in order to obtain a common electrode voltage that is swung and synchronized with the image signal in a predetermined period (See Fig. 15A, items Vcom, Vs, in description See Col.7, Lines 6-11).

Moon et al. does not show a common electrode line formed in the horizontal direction between the gate lines.

Park teaches a common electrode line formed in the horizontal direction between the gate lines (See Fig. 1, 6, items 26-28, in description See Col. 3, Lines 40-65 and Col. 11, Lines 35-53).

It would have been obvious to one of ordinary skill in the art at the time of the invention use a common electrode line formed in the horizontal direction between the gate lines as shown by Park in the Moon et al. apparatus in order to provide a thin film transistor panel for an LCD that reduces distortion of the voltage applied to a storage electrode line such that crosstalk and flicker problems are minimized (See Col. 1, Lines 53-57 in the Park reference).

As to claim 13, as best understood by examiner, Moon et al. teaches a liquid crystal display panel, comprising: a plurality of gate lines (See Fig. 10, item 120, in description See Col. 6, Lines 15-20); a plurality of data lines (See Fig. 10, item 120, in description See Col. 6, Lines 15-20); a first pixel electrode formed at an odd row of an odd column and at an even row of an even column among areas formed by the data lines and the gate lines (See Fig. 8a-8b, in description See from Col. 2, Line 65 to Col. 3, Line 3); a second pixel electrode formed at an odd row of an even column and at an even row of an odd column (See Fig. 8a-8b, in description

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See from Col. 2, Line 65 to Col. 3, Line 3), a method for driving the LCD, comprising steps of: receiving an image signal from an external image signal source and providing the image signal to a data line (See Fig. 1, item 11, in description See Col. 2, Lines 3-8); generating a first scanning signal and providing the same to an odd pixel of an odd gate line and an even pixel of an even gate line; generating a second scanning signal and providing the same to an add pixel of an even gate line and an even pixel of an odd gate line (See Fig. 8a-8b, in description See from Col. 2, Line 65 to Col. 3, Line 3); sequentially providing the first scanning signal and the second scanning signal to the gate line (See Fig. 8a-8b, in description See Col. 2, Lines 40-45); supplying a common electrode voltage to a common electrode line so as to superimpose voltage to transmission curves of positive and negative polarity (See Fig. 2, item 26, in description See Col. 2, Lines 3-9) driving together with the sequential providing of the first scanning signal and the second scanning signal (See Fig. 14a-14b, 15a-15b, items Vs, Vg, Vcom, in description See Col. 6, Lines 52-58).

Moon et al. does not show a common electrode line formed in the horizontal direction between the gate lines.

Park teaches a common electrode line formed in the horizontal direction between the gate lines (See Fig. 1, 6, items 26-28, in description See Col. 3, Lines 40-65 and Col. 11, Lines 35-53).

It would have been obvious to one of ordinary skill in the art at the time of the invention use a common electrode line formed in the horizontal direction between the gate lines as shown by Park in the Moon et al. apparatus in order to provide a thin film transistor panel for an LCD

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that reduces distortion of the voltage applied to a storage electrode line such that crosstalk and flicker problems are minimized (See Col. 1, Lines 53-57 in the Park reference).

As to claims 3, 8, 16 Moon et al teaches polarity of each pixel is inverted to a different polarity per each frame (See Fig. 8a versus Fig. 8b).

As to claim 5, Moon et al. teaches a liquid crystal display panel, comprising: a plurality of gate lines formed in the horizontal direction (See Fig. 10, item 120, in description See Col. 6, Lines 15-20); a plurality of data lines formed in the vertical direction (See Fig. 10, item 120, in description See Col. 6, Lines 15-20); a first pixel electrode formed at an odd row of an odd column and at an even row of an even column among areas formed by the data lines and the gate lines (See Fig. 8a-8b, in description See from Col. 2, Line 65 to Col. 3, Line 3); a second pixel electrode formed at an odd row of an even column and at an even row of an odd column of the areas, and wherein a polarity of the second electrode is different from the first pixel electrode (See Fig. 8a-8b, in description See from Col. 2, Line 65 to Col. 3, Line 3).

Moon et al. does not show a common electrode line formed in the horizontal direction between the gate lines.

Park teaches a common electrode line formed in the horizontal direction between the gate lines (See Fig. 1, 6, items 26-28, in description See Col. 3, Lines 40-65 and Col. 11, Lines 35-53).

It would have been obvious to one of ordinary skill in the art at the time of the invention use a common electrode line formed in the horizontal direction between the gate lines as shown by Park in the Moon et al. apparatus in order to provide a thin film transistor panel for an LCD

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that reduces distortion of the voltage applied to a storage electrode line such that crosstalk and flicker problems are minimized (See Col. 1, Lines 53-57 in the Park reference).

As to claim 7, Moon et al teaches generating a first scanning signal and providing the same to an odd pixel of an odd gate line and an even pixel of an even gate line; generating a second scanning signal and providing the same to an add pixel of an even gate line and an even pixel of an odd gate line (See Fig. 8a-8b, in description See from Col. 2, Line 65 to Col. 3, Line 3).

As to claims 9-10 and 14, Moon et al. teaches the swung common electrode voltage is a square wave having a period identical or multiple to the image signal (See Fig. 14a-14b, 15a-15b, items Vs, Vg, Vcom, in description See Col. 6, Lines 52-58).

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moon et al. and Park as aforementioned in claim 4 in view of Lee (US Patent No. 5,966,191).

Moon et al. and Lee do not show low voltage TAP IC for line inversion driving.

Lee teaches a driving tap IC (See Fig. 2, item 3, in description See Col. 3, Line 24).

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a driving tap IC as shown by Lee in Park and the Moon et al. apparatus in order to use low voltage TAP IC for line inversion driving.

Allowable Subject Matter

7. Claims 2, 6, 12 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Relative to claims 2 and 6, the major difference between the teaching of the prior art of record (US patent No. 6,421,039 B1 to Moon et al. and Us Patent No. 6,573,532 to Park) and the instant invention is that the said prior art **does not teach** the first pixel electrode is formed at an area respectively surrounded by an odd data line and its subsequent adjacent even data line and is connected to odd gate line and its subsequent adjacent common electrode line, and formed at an area respectively surrounded by an even data line and its subsequent adjacent odd data line and is connected to even common electrode line and its subsequent adjacent gate line, and the second pixel electrode is formed at an area respectively surrounded by an even data line and its subsequent adjacent odd data line and is connected to odd common electrode and its subsequent adjacent gate line, formed at an area respectively surrounded by an odd data line and its subsequent adjacent even data line and connected to even gate line and its subsequent adjacent common electrode line.

Relative to claims 12 and 15, the major difference between the teaching of the prior art of record (US patent No. 6,421,039 B1 to Moon et al. and Us Patent No. 6,573,532 to Park) and the instant invention is that the said prior art **does not teach** a formula for a swing amplitude of the common electrode voltage.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

The Hebiguchi et al. (US Patent No. 6,583,777 B2) reference discloses active matrix type liquid crystal-display device, and substrate for the same.

The Uchino et al. (US Patent No. 6,512,505 B1) reference discloses liquid crystal-display apparatus, its driving method and liquid crystal-display system.

The Hagari (US Patent No. 6,437,775 B1) reference discloses flat display unit.

The Libsch et al. (US Patent No. 6,310,594 B1) reference discloses driving method for pixel multiplexing circuits.

The Cole (US Patent No. 6,469,684 B1) reference discloses cole sequence inversion circuitry for active matrix device.

Telephone inquire

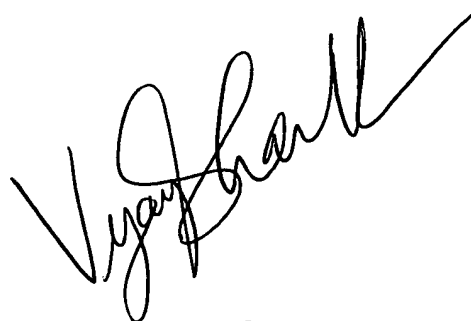
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Shapiro whose telephone number is 703-305-5661. The examiner can normally be reached on 8 a.m. to 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 703-305-4938. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4750.

ls

A handwritten signature in black ink, appearing to read 'Vijay Shankar', written in a cursive style.

**VIJAY SHANKAR
PRIMARY EXAMINER**